IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (currently amended) A composite porous membrane comprising a hydrophobic substrate coated with difunctional surface-modifying molecules, each difunctional surface-modifying molecule comprising a hydrophobic portion preferentially associated with the substrate and a hydrophilic portion, wherein the surface-modifying molecules are polymerized and crosslinked by UV, gamma, or X-radiation, to form a crosslinked hydrophilic polymeric network at the surface of the membrane.

2. (Original) The membrane according to claim 1, wherein the hydrophilic portion of the surface-modifying molecules comprises at least two crosslinking active groups.

3. (Original) The membrane according to claim 2, wherein the crosslinking active group comprises a carbon-carbon double bond.

4. (Original) The membrane according to claim 1, wherein the difunctional surface-modifying molecules comprise difunctional acrylate molecules.

5. (Original) The membrane according to claim 1, wherein 100% of molecules associated with the substrate comprise difunctional surface-modifying molecules.

6. (previously presented) The membrane according to claim 1, wherein the hydrophobic portion is a hydrophobic alkyl, aromatic group, or olefinic hydrocarbon group.

7. (previously presented) The membrane according to claim 1, wherein the hydrophobic portion comprises an aromatic hydrocarbon molecule.

8. (Original) The membrane according to claim 7, wherein the aromatic hydrocarbon comprises a bisphenol A group.

9. (previously presented) The membrane according to claim 1, wherein the hydrophobic portion does not form covalent bonds with the surface.

10. (previously presented) The membrane according to claim 1, wherein the hydrophilic portion is positively charged.

11. (previously presented) The membrane according to claim 1, wherein the hydrophilic portion is negatively charged.

12. (previously presented) The membrane according to claim 1, wherein the hydrophilic portion comprises a neutral charge.

13. (previously presented) The membrane according to claim 1, wherein the hydrophilic portion comprises the general formula $[-X_{n1}-Y-CR=CH_2]_{n2}$ where X is independently selected from the group consisting of (-CH2-CH2-O-); (-CH2-O-); (-CH2-CH(COOH)-); (-CH2-CH(OH)-); Y is selected from the group consisting of ($[-CH2-]_{n3}$); (-COO-); n_1 is from about 1-50; n_2 is from about 1-2; and n_3 can be from about 1 to about 50.

14. (Original) The membrane according to claim 1, wherein the difunctional surface modifying molecules are polymerized on the substrate surface after being preferentially adsorbed with the substrate surface.

15. (Original) The membrane according to claim 1, wherein the difunctional surface molecules comprise ethoxylated (30) bisphenol A diacrylates.

16. (previously presented) The membrane according to claim 1, wherein the difunctional-surface molecules are polymerized using a photoinitiator, and wherein the photoinitiator is preferentially adsorbed by the substrate surface.

17. (previously presented) The membrane according to claim 1, wherein the difunctional-surface molecules are polymerized using a photoinitiator that comprises a substantially hydrophobic molecule.

18. (previously presented) The membrane according to claim 1, wherein the difunctional-surface molecules are polymerized using a photoinitiator selected from the group consisting of 1-hydroxy-cyclohexyl-phenyl-ketone; 2-benzyl-2-dimethylamino-1-(4-morpholinophenyl)-butanone-1; 50% 1-hydroxy-cyclohexyl-phenyl-ketone and 50% benzophenone; 25% bis(2,6-dimethoxybenzoyl)-2,4,4-trimethyl pentylphosphineoxide and 75% 2-hydroxy-2-methyl-1-phenyl-propan-1-one; 2,2-dimethoxy-1,2-diphenylethan-1-one; bis(2,4,6-trimethylbenzoyl)-phenylphosphineoxide; 80% 2-hydroxy-2-methyl-1-phenyl-propan-1-one and 20% 1-hydroxy-cyclohexyl-phenyl-ketone; 25% bis(2,6-dimethoxybenzoyl)-2,4,4-trimethyl-pentylphosphineoxide and 75% 1-hydroxy-cyclohexyl-phenyl-ketone; 2-hydroxy-2-methyl-1-phenyl-propan-1-one; benzophenone; 50% 2,4,6-trimethylbenzoyl-diphenyl-phosphineoxide and 50% 2-hydroxy-2-methyl-1-phenyl-propan-1-one; bis(□5-2,4-cyclopentadien-1-yl)-bis(2,6-dicluoro-3-(1H-pyrrol-1-yl)-phenyl)titanium; 2-methyl-1[4-(methylthio)phenyl]-2-morpholinopropan-1-one; 30% 2-benxyl-2-dimethylamino-1-(4-morpholinophenyl)-butanone-1 and 70% 2,2-dimethoxy-1,2-diphenylethan-1-one; and 1-[4-(2-hydroxyethoxy)-phenyl]-2-hydroxy-2-methyl-1-propane-1-one.

19. (Original) The membrane according to claim 1, wherein the membrane has an average pore size of from about greater than 0 μm to about 10 μm.

20. (Original) The membrane according to claim 1, wherein the hydrophobic substrate comprises polyvinylidene fluoride.

21. (Original) The membrane according to claim 1, wherein the membrane is wettable within less than about 30 seconds after drying upon contacting with an aqueous solution.

22. (Original) The membrane according to claim 1, wherein the membrane is autoclavable.

23-47 (Canceled).

48. (previously presented) The membrane according to claim 1, wherein the hydrophobic portion is capable of significant association with the substrate.

49. (previously presented) The membrane according to claim 1, wherein the composite porous membrane has a pore size prior to coating with difunctional surface-modifying molecules that is substantially the same as the pore size of the composite porous membrane after coating with difunctional surface-modifying molecules.

50. (currently amended) A composite porous membrane comprising a hydrophobic substrate coated with difunctional surface-modifying molecules, each difunctional surface-modifying molecule comprising a hydrophobic portion preferentially associated with the substrate and a hydrophilic portion, wherein the surface-modifying molecules are polymerized and crosslinked by UV, gamma, or X-radiation, to form a crosslinked hydrophilic polymeric network at the surface of the membrane, and wherein the pore sizes of the coated composite porous membrane is substantially the same as the pore size of the composite porous membrane before coating.

51. (currently amended) A composite porous membrane comprising a hydrophobic substrate coated with difunctional surface-modifying molecules, each difunctional surface-modifying molecule comprising a hydrophobic portion preferentially associated with the substrate and a hydrophilic portion, wherein the surface-modifying molecules are polymerized and crosslinked by UV, gamma, or X-radiation, to form a crosslinked hydrophilic polymeric network at the surface of the membrane, wherein the coating is provided on the hydrophobic substrate by exposure to a reagent solution comprising less than 1% difunctional surface-modifying molecule.

52. (currently amended) A composite porous membrane comprising a hydrophobic substrate coated with difunctional surface-modifying molecules, the coating providing a wettable membrane, each difunctional surface-modifying molecule comprising a hydrophobic portion preferentially associated with the substrate and a hydrophilic portion, wherein the surface-

modifying molecules are polymerized and crosslinked by UV, gamma, or X-radiation, to form a crosslinked hydrophilic polymeric network at the surface of the membrane, wherein the coating is provided on the hydrophobic substrate by exposure to a reagent solution comprising difunctional surface-modifying molecule, and wherein the reagent solution requires less than 1% difunctional surface-modifying molecule to provide the wettable membrane.

53. (previously presented) The membrane according to claim 51 or 52, wherein the reagent solution comprises less than about 0.5% difunctional surface-modifying molecule.

54. (previously presented) The membrane according to claim 51 or 52, wherein the reagent solution comprises less than about 0.25% difunctional surface-modifying molecule.

55. (currently amended) A composite porous membrane comprising a hydrophobic substrate coated with difunctional surface-modifying molecules, each difunctional surface-modifying molecule comprising a hydrophobic portion preferentially associated with the substrate and a hydrophilic portion, wherein the surface-modifying molecules are polymerized and crosslinked by UV, gamma, or X-radiation, to form a crosslinked hydrophilic polymeric network at the surface of the membrane, wherein the flow rate through the pores of the coated membrane is substantially the same as the flow rate through the pores of the non-coated membrane.

56. (previously presented) The membrane according to claim 55, wherein the flow rate through the pores of the coated membrane is at least about 93% of the flow rate through the pores of the non-coated membrane.

57. (previously presented) The membrane according to claim 55, wherein the flow rate through the pores of the coated membrane is at least about 96% of the flow rate through the pores of the non-coated membrane.

58. (currently amended) A composite porous membrane comprising a hydrophobic substrate coated with difunctional surface-modifying molecules, the difunctional surface-modifying

molecules comprising ethoxylated (30) bisphenol A diacrylates, each difunctional surface-modifying molecule comprising a hydrophobic portion preferentially associated with the substrate and a hydrophilic portion, wherein the surface-modifying molecules are polymerized and crosslinked by UV, gamma, or X-radiation, to form a crosslinked hydrophilic polymeric network at the surface of the membrane.